CLAIMS

1. A pixel circuit for driving an electro-optical element changing in luminance according to a flowing current, comprising:

a data line to which a data signal in accordance with a luminance information is supplied;

first, second, third, and fourth nodes;

first and second reference potentials;

a reference current supplying means for supplying a predetermined reference current;

an electric connecting means connected to the second node;

a pixel capacitor element connected between the first node and the second node;

a coupling capacitor element connected between the electric connecting means and the fourth node;

a drive transistor forming a current supply line between a first terminal and a second terminal and controlling a current flowing in the current supply line in accordance with the potential of the control terminal connected to the second node;

a first switch connected between the first node and the third node;

a second switch connected between the third node and the fourth node;

a third switch connected between the first node and a fixed potential;

a fourth switch connected between the second node and a predetermined potential line;

a fifth switch connected between the data line and the fourth switch; and

a sixth switch connected between the third node and the reference current supplying means, wherein,

between the first reference potential and the second reference potential, the current supply line of the drive transistor, the first node, the third node, the first switch, and the electro-optical element are connected in series.

2. A pixel circuit as set forth in claim 1, wherein the electric connecting means includes an interconnect for directly connecting the second node and the coupling capacitor element.

3. A pixel circuit as set forth in claim 1, wherein the electric connecting means includes a seventh switch selectively connecting the second node and the coupling capacitor element.

4. A pixel circuit as set forth in claim 1, further including:

a seventh switch connected between the first node and the electro-optical element and

an eighth switch connected between the first node and the data line.

5. A pixel circuit as set forth in claim 1, further including:

a seventh switch connected between the first node and the electro-optical element and

an eighth switch connected between the first node and the fourth node.

6. A pixel circuit as set forth in claim 3, further including:

a seventh switch connected between the first node and the electro-optical element and

an eighth switch connected between the first node and the data line.

7. A pixel circuit as set forth in claim 3, further including:

a seventh switch connected between the first node and the electro-optical element and

an eighth switch connected between the first node and the fourth node.

8. A pixel circuit as set forth in claim 1, wherein the predetermined potential line is shared together with the data line.

9. A pixel circuit as set forth in claim 1, wherein the drive transistor is a field effect transistor, a source

is connected to the third node, and a drain is connected to the first reference potential.

10. A pixel circuit as set forth in claim 2, wherein, when the electro-optical element is driven,

as a first stage, in a state where the first, second, fourth, fifth, and sixth switches are held in a non-conductive state, the third switch is held in the conductive state and the first node is connected to a fixed potential;

as a second stage, the second, fourth, and sixth switches are held in the conductive state, a predetermined potential is input to the second node, the reference current flows in the third node, and the predetermined potential is charged in the pixel capacitor element;

as a third stage, the second and sixth switches are held in the non-conductive state, further the fourth switch is held in the non-conductive state, the fifth switch is held in the conductive state, the data propagated through the data line is input to the second node, then the fifth switch is held in the non-conductive state; and

as a fourth stage, the first switch is held in the conductive state, and the third switch is held in the non-conductive state.

11. A pixel circuit as set forth in claim 3, wherein, when the electro-optical element is driven,

as a first stage, in a state where the first, second, fourth, fifth, sixth, and seventh switches are held in the non-conductive state, the third switch is held in the conductive state, and the first node is connected to the fixed potential;

as a second stage, the second, fourth, sixth, and seventh switches are held in the conductive state, the data potential propagated through the data line is input to the second node, the reference current flows in the third node, and a predetermined potential is charged in the pixel capacitor element;

as a third stage, the second and sixth switches are held in the non-conductive state, further the fourth switch is held in the non-conductive state, the fifth switch is held in the conductive state, the data propagated through the data line is input to the second node via the fourth node, then the fifth and seventh switches are held in the non-conductive state; and

as a fourth stage, the first switch is held in the conductive state, and the third switch is held in the non-conductive state.

12. A display device comprising:

a plurality of pixel circuits arranged in a matrix;

data lines interconnected for each column of a

matrix array of the pixel circuits and supplied with a data signal in accordance with the luminance information;

first and second reference potentials; and

a reference current supplying means for supplying a predetermined reference current, wherein

the pixel circuit has:

an electro-optical element changing in luminance according to a flowing current;

first, second, third, and fourth nodes;

an electric connecting means connected to the second node;

a pixel capacitor element connected between the first node and the second node;

a coupling capacitor element connected between the electric connecting means and the fourth node;

a drive transistor forming a current supply line between a first terminal and a second terminal and controlling a current flowing in the current supply line in accordance with the potential of the control terminal connected to the second node;

a first switch connected between the first node and the third node;

a second switch connected between the third node and the fourth node;

a third switch connected between the first node

and a fixed potential;

a fourth switch connected between the second node and a predetermined potential line;

a fifth switch connected between the data line and the fourth switch; and

a sixth switch connected between the third node and the reference current supplying means, and,

between the first reference potential and the second reference potential, the current supply line of the drive transistor, the first node, the third node, the first switch, and the electro-optical element are connected in series.

13. A method for driving a pixel circuit having

an electro-optical element changing in luminance according to a flowing current;

a data line to which a data signal in accordance with luminance information is supplied;

first, second, third, and fourth nodes;

first and second reference potentials;

a reference current supplying means for supplying a predetermined reference current;

an electric connecting means connected to the second node;

a pixel capacitor element connected between the first node and the second node;

a coupling capacitor element connected between the electric connecting means and the fourth node;

a drive transistor forming a current supply line between a first terminal and a second terminal and controlling a current flowing in the current supply line in accordance with the potential of the control terminal connected to the second node;

a first switch connected between the first node and the third node;

a second switch connected between the third node and the fourth node;

a third switch connected between the first node and a fixed potential;

a fourth switch connected between the second node and a predetermined potential line;

a fifth switch connected between the data line and the fourth switch; and

a sixth switch connected between the third node and the reference current supplying means, wherein

the current supply line of the drive transistor, the first node, the third node, the first switch, and the electro-optical element are connected in series between the first reference potential and the second reference potential, comprising steps of

holding the third switch in the conductive state

and connecting the first node to a fixed potential in the state where the first, second, fourth, fifth, and sixth switches are held in the non-conductive state;

holding the second, fourth, and the sixth switches in the conductive state and inputting the predetermined potential to the second node, sending the reference current in the third node, and charging the predetermined potential in the pixel capacitor element;

holding the second and sixth switches in the non-conductive state, and further holding the fourth switch in the non-conductive state, holding the fifth switch in the conductive state and inputting the data propagated through the data line to the second node, then holding the fifth switch in the non-conductive state; and

holding the first switch in the conductive state and holding the third switch in the non-conductive state.